

PCT POWER OF ATTORNEY

(for an international application filed under the Patent Cooperation Treaty)

(PCT Rule 90.4)

The undersigned applicant(s) (Names should be indicated as they appear in the request)

LI, Yan Chun
5652 S. Haper Avenue
Chicago, Illinois 60637
United States of America

hereby appoints (appoint) the following person(s) as: ☒ agent ☐ common representative

Name and address

(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

Peter C. Lauro, Esq., Reg. No. 32,360, and all other practitioners associated with Customer No. 21874 at

EDWARDS & ANGELL, LLP
P.O. Box 55874
Boston, Massachusetts 02205
United States of America

to represent the undersigned before

- ☒ all the competent International Authorities
☐ the International Searching Authority only
☐ the International Preliminary Examining Authority only

in connection with the international application identified below:

Title of the invention: GEMINI VITAMIN D3 COMPOUNDS AND METHODS OF USE
THEREOF

Applicant's or agent's file reference: 59756WO (49949)

International application number (if already available): US04/13703

filed with the following Office: US as receiving Office and to make or receive
payments on behalf of the undersigned.

Signatures of the applicant(s) (where there are several persons, each of them must sign, next to each signature, indicate the name of the person signing and the capacity in which the person signs, if such capacity is not obvious from reading this power):

Date: 8/18/2005

By: 

Yan Chun Li

PCT
POWER OF ATTORNEY
(for an international application filed under the Patent Cooperation Treaty)

(PCT Rule 90.4)

The undersigned applicant(s) *(Names should be indicated as they appear in the request)*

The University of Chicago
5555 South Woodlawn Avenue, Suite 300
Chicago, IL 60637
United States of America

hereby appoints (appoint) the following person(s) as: ☒ agent ☐ common representative

Name and address

(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

Peter C. Lauro, Esq., Reg. No. 32,360, and all other practitioners associated with Customer No. 21874 at

EDWARDS & ANGELL, LLP
P.O. Box 55874
Boston, Massachusetts 02205
United States of America

to represent the undersigned before

- ☒ all the competent International Authorities
☐ the International Searching Authority only
☐ the International Preliminary Examining Authority only

in connection with the international application identified below:

Title of the invention: GEMINI VITAMIN D3 COMPOUNDS AND METHODS OF USE
THEREOF

Applicant's or agent's file reference: 59756WO (49949)

International application number (if already available): US04/13703

filed with the following Office: US as receiving Office and to make or receive
payments on behalf of the undersigned.

Signatures of the applicant(s) *(where there are several persons, each of them must sign, next to each signature, indicate the name of the person signing and the capacity in which the person signs, if such capacity is not obvious from reading this power):*

Date:

Aug 19, 2005

By:

Name (print):

ALPHEUS

Title (print):

Director Office of
Innovation & Intellectual Property

**PATENT COOPERATION TREATY
POWER OF ATTORNEY**

The undersigned Applicant, Milan R. USKOKOVIC, hereby appoints the following persons as agents:

David G. Conlin	Reg. No. 27,026	William J. Daley, Jr.	Reg. No. 35,487
Christine C. O'Day	Reg. No. 38,256	Jennifer K. Rosenfield	Reg. No. 53,531
Peter J. Manso	Reg. No. 32,264	Gregory B. Butler	Reg. No. 34,558
George W. Neuner	Reg. No. 26,964	Robert L. Buchanan	Reg. No. 40,927
Lisa Swiszc Hazzard	Reg. No. 44,368	Kathryn A. Piffat	Reg. No. 34,901
Linda M. Buckley	Reg. No. 31,003	Barry Kramer	Reg. No. 20,622
David A. Tucker	Reg. No. 27,840	Steven J. Jensen	Reg. No. 42,693
John J. Penny, Jr.	Reg. No. 36,984	Richard J. Roos	Reg. No. 45,053
Peter F. Corless	Reg. No. 33,860	Scott D. Wofsy	Reg. No. 35,413
George W. Hartnell, III	Reg. No. 42,639	George N. Chaclas	Reg. No. 46,608
Howard M. Gitten	Reg. No. 32,138	Richard H. Newman	Reg. No. 41,222
Peter C. Lauro	Reg. No. 32,360	Daniel F. Coughlin	Reg. No. 36,111
Peter J. Manus	Reg. No. 26,766	David J. Silvia	Reg. No. 49,036
John B. Alexander	Reg. No. 48,399	Marina I. Heusch	Reg. No. 47,647
J. Mark Konieczny	Reg. No. 47,715	Jeffrey D. Hsi	Reg. No. 40,024
Meghan M. Makary	Reg. No. 53,303	Barbara Kitchell	Reg. No. 33,928
Jonathan D. Baskin	Reg. No. 39,499	Stephana E. Patton	Reg. No. 50,373
S. Mathew Cairns	Reg. No. 42,378	John J. Penny	Reg. No. 36,984
George N. Chaclas	Reg. No. 46,608	John J. Piskorski	Reg. No. 35,647
Margaret J. McLaren	Reg. No. 53,303	Marla L. Tocker	Reg. No. 54,493

Address:

EDWARDS & ANGELL, LLP
P.O. Box 55874
Boston, Massachusetts 02205
United States of America

to act on his behalf before the competent International Authorities in connection with the International Application concerning

TITLE: GEMINI VITAMIN D3 COMPOUNDS AND METHODS OF USE
THEREOF

AGENT'S FILE REFERENCE: 49949-59756WO

filed with the United States PCT Receiving Office as PCT/US04/13703 and to make or receive payments on behalf of the undersigned.

By: Milan R. Uskokovic
Milan R. USKOKOVIC

Date: 7.2.2004

**PATENT COOPERATION TREATY
POWER OF ATTORNEY**

The undersigned Applicant, Hubert MAEHR, hereby appoints the following persons as agents:

David G. Conlin	Reg. No. 27,026	William J. Daley, Jr.	Reg. No. 35,487
Christine C. O'Day	Reg. No. 38,256	Jennifer K. Rosenfield	Reg. No. 53,531
Peter J. Manso	Reg. No. 32,264	Gregory B. Butler	Reg. No. 34,558
George W. Neuner	Reg. No. 26,964	Robert L. Buchanan	Reg. No. 40,927
Lisa Swiszc Hazzard	Reg. No. 44,368	Kathryn A. Piffat	Reg. No. 34,901
Linda M. Buckley	Reg. No. 31,003	Barry Kramer	Reg. No. 20,622
David A. Tucker	Reg. No. 27,840	Steven J. Jensen	Reg. No. 42,693
John J. Penny, Jr.	Reg. No. 36,984	Richard J. Roos	Reg. No. 45,053
Peter F. Corless	Reg. No. 33,860	Scott D. Wofsy	Reg. No. 35,413
George W. Hartnell, III	Reg. No. 42,639	George N. Chaclas	Reg. No. 46,608
Howard M. Gitten	Reg. No. 32,138	Richard H. Newman	Reg. No. 41,222
Peter C. Lauro	Reg. No. 32,360	Daniel F. Coughlin	Reg. No. 36,111
Peter J. Manus	Reg. No. 26,766	David J. Silvia	Reg. No. 49,036
John B. Alexander	Reg. No. 48,399	Marina I. Heusch	Reg. No. 47,647
J. Mark Konieczny	Reg. No. 47,715	Jeffrey D. Hsi	Reg. No. 40,024
Meghan M. Makary	Reg. No. 53,303	Barbara Kitchell	Reg. No. 33,928
Jonathan D. Baskin	Reg. No. 39,499	Stephana E. Patton	Reg. No. 50,373
S. Mathew Cairns	Reg. No. 42,378	John J. Penny	Reg. No. 36,984
George N. Chaclas	Reg. No. 46,608	John J. Piskorski	Reg. No. 35,647
Margaret J. McLaren	Reg. No. 53,303	Marla L. Tocker	Reg. No. 54,493

Address:

EDWARDS & ANGELL, LLP
P.O. Box 55874
Boston, Massachusetts 02205
United States of America

to act on his behalf before the competent International Authorities in connection with the International Application concerning

TITLE: GEMINI VITAMIN D3 COMPOUNDS AND METHODS OF USE
THEREOF

AGENT'S FILE REFERENCE: 49949-59756WO

filed with the United States PCT Receiving Office as PCT/US04/13703 and to make or receive payments on behalf of the undersigned.

By: 
Hubert MAEHR

Date: July 2, 2004

**PATENT COOPERATION TREATY
POWER OF ATTORNEY**

The undersigned Applicant, Luciano ADORINI, hereby appoints the following persons as agents:

David G. Conlin	Reg. No. 27,026	William J. Daley, Jr.	Reg. No. 35,487
Christine C. O'Day	Reg. No. 38,256	Jennifer K. Rosenfield	Reg. No. 53,531
Peter J. Manso	Reg. No. 32,264	Gregory B. Butler	Reg. No. 34,558
George W. Neuner	Reg. No. 26,964	Robert L. Buchanan	Reg. No. 40,927
Lisa Swiszc Hazzard	Reg. No. 44,368	Kathryn A. Piffat	Reg. No. 34,901
Linda M. Buckley	Reg. No. 31,003	Barry Kramer	Reg. No. 20,622
David A. Tucker	Reg. No. 27,840	Steven J. Jensen	Reg. No. 42,693
John J. Penny, Jr.	Reg. No. 36,984	Richard J. Roos	Reg. No. 45,053
Peter F. Corless	Reg. No. 33,860	Scott D. Wofsy	Reg. No. 35,413
George W. Hartnell, III	Reg. No. 42,639	George N. Chaclos	Reg. No. 46,608
Howard M. Gitten	Reg. No. 32,138	Richard H. Newman	Reg. No. 41,222
Peter C. Lauro	Reg. No. 32,360	Daniel F. Coughlin	Reg. No. 36,111
Peter J. Manus	Reg. No. 26,766	David J. Silvia	Reg. No. 49,036
John B. Alexander	Reg. No. 48,399	Marina I. Heusch	Reg. No. 47,647
J. Mark Konieczny	Reg. No. 47,715	Jeffrey D. Hsi	Reg. No. 40,024
Meghan M. Makary	Reg. No. 53,303	Barbara Kitchell	Reg. No. 33,928
Jonathan D. Baskin	Reg. No. 39,499	Stephana E. Patton	Reg. No. 50,373
S. Mathew Cairns	Reg. No. 42,378	John J. Penny	Reg. No. 36,984
George N. Chaclos	Reg. No. 46,608	John J. Piskorski	Reg. No. 35,647
Margaret J. McLaren	Reg. No. 53,303	Marla L. Tocker	Reg. No. 54,493

Address:

EDWARDS & ANGELL, LLP
P.O. Box 55874
Boston, Massachusetts 02205
United States of America

to act on his behalf before the competent International Authorities in connection with the International Application concerning

TITLE: GEMINI VITAMIN D3 COMPOUNDS AND METHODS OF USE
THEREOF

AGENT'S FILE REFERENCE: 49949-59756WO

filed with the United States PCT Receiving Office as PCT/US04/13703 and to make or receive payments on behalf of the undersigned.

By: Luciano Adorini
Luciano ADORINI

Date: 28 June, 2004

**PATENT COOPERATION TREATY
POWER OF ATTORNEY**

The undersigned Applicant, Giuseppe PENNA, hereby appoints the following persons as agents:

David G. Conlin	Reg. No. 27,026	William J. Daley, Jr.	Reg. No. 35,487
Christine C. O'Day	Reg. No. 38,256	Jennifer K. Rosenfield	Reg. No. 53,531
Peter J. Manso	Reg. No. 32,264	Gregory B. Butler	Reg. No. 34,558
George W. Neuner	Reg. No. 26,964	Robert L. Buchanan	Reg. No. 40,927
Lisa Swiszczy Hazzard	Reg. No. 44,368	Kathryn A. Piffat	Reg. No. 34,901
Linda M. Buckley	Reg. No. 31,003	Barry Kramer	Reg. No. 20,622
David A. Tucker	Reg. No. 27,840	Steven J. Jensen	Reg. No. 42,693
John J. Penny, Jr.	Reg. No. 36,984	Richard J. Roos	Reg. No. 45,053
Peter F. Corless	Reg. No. 33,860	Scott D. Wofsy	Reg. No. 35,413
George W. Hartnell, III	Reg. No. 42,639	George N. Chaclos	Reg. No. 46,608
Howard M. Gitten	Reg. No. 32,138	Richard H. Newman	Reg. No. 41,222
Peter C. Lauro	Reg. No. 32,360	Daniel F. Coughlin	Reg. No. 36,111
Peter J. Manus	Reg. No. 26,766	David J. Silvia	Reg. No. 49,036
John B. Alexander	Reg. No. 48,399	Marina I. Heusch	Reg. No. 47,647
J. Mark Konieczny	Reg. No. 47,715	Jeffrey D. Hsi	Reg. No. 40,024
Meghan M. Makary	Reg. No. 53,303	Barbara Kitchell	Reg. No. 33,928
Jonathan D. Baskin	Reg. No. 39,499	Stephana E. Patton	Reg. No. 50,373
S. Mathew Cairns	Reg. No. 42,378	John J. Penny	Reg. No. 36,984
George N. Chaclos	Reg. No. 46,608	John J. Piskorski	Reg. No. 35,647
Margaret J. McLaren	Reg. No. 53,303	Marla L. Tocker	Reg. No. 54,493

Address:

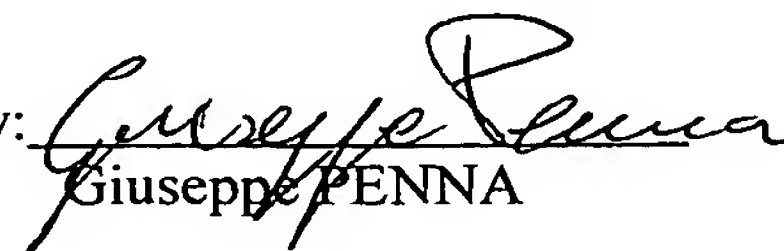
EDWARDS & ANGELL, LLP
P.O. Box 55874
Boston, Massachusetts 02205
United States of America

to act on his behalf before the competent International Authorities in connection with the International Application concerning

TITLE: GEMINI VITAMIN D3 COMPOUNDS AND METHODS OF USE
THEREOF

AGENT'S FILE REFERENCE: 49949-59756WO

filed with the United States PCT Receiving Office as PCT/US04/13703 and to make or receive payments on behalf of the undersigned.

By: 
Giuseppe PENNA

Date: 28 June, 2004

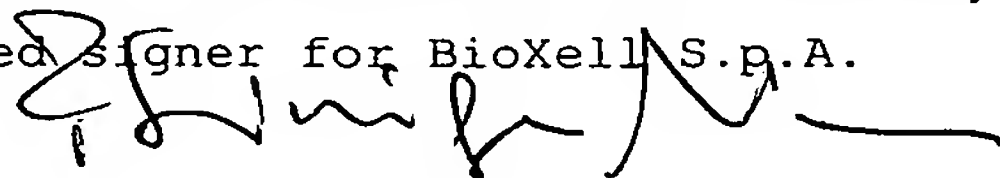
GENERAL POWER OF ATTORNEY
(PCT Rule 90.5)
PATENT COOPERATION TREATY
APPOINTMENT OF AGENT OR COMMON REPRESENTATIVE

The undersigned Applicant hereby appoints John B. Alexander, 48,399; Jonathan D. Baskin, 39,499; Robert L. Buchanan, 40,927; Linda M. Buckley, 31,003; Greg B. Butler, 34,558; S. Mathew Cairns, 42,378; George N. Chaclos, 46,608; David G. Conlin, 27,026; Peter F. Corless, 33,860; William J. Daley, 35,487; Howard M. Gitten, 32,138; George W. Hartnell, 42,639; Lisa Swiszczy Hazzard, 44,368; Marina Heusch, 47,647; Jeffrey D. Hsi, 40,024; Steven M. Jensen, 42,693; Barbara S. Kitchell, 33,928; J. Mark Konieczny, 47,715; Barry Kramer, 20,622; Peter C. Lauro, 32,360; Meghan M. Makary, 51,988; Peter J. Manso, 32,264; Peter J. Manus, 26,766; Margaret J. McLaren, Ph.D., 53,303; George W. Neuner, 26,964; Richard H. Newman, 41,222; Christine C. O'Day, 38,256; Stephana E. Patton, 50,373; John J. Penny, 36,984; Kathryn A. Piffat, 34,901; John J. Piskorski, 35,647; Richard J. Roos, 45,053; Jennifer K. Rosenfield, 53,531; David J. Silvia, 49,036; Marla L. Tocker, 54,493; David A. Tucker, 27,840; and Scott D. Wofsy, 35,413 of Edwards & Angell, LLP, P.O. Box 55874, Boston, Massachusetts 02205, United States of America as agents to act on its behalf before the Competent International Authorities in connection with any and all international applications filed by the undersigned with the US/RO and to make or receive payments on its behalf.

Name: FRANCESCO SINIGAGLIA

Title: CHIEF EXECUTIVE OFFICER, BioXell S.p.A.

Authorized Signer for BioXell S.p.A.



Date: June 28, 2004

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 59756WO (49949)	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US04/13703	International filing date (<i>day/month/year</i>) 30 April 2004 (30.04.2004)	(Earliest) Priority Date (<i>day/month/year</i>) 30 April 2003 (30.04.2003)
Applicant BIOXELL S.P.A.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the Report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☐

With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☒ Certain claims were found unsearchable (See Box No. II)

3. ☐ Unity of invention is lacking (See Box No. III)

4. With regard to the title,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the abstract,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

a. the figure of the drawings to be published with the abstract is Figure No. 1



as suggested by the applicant.



as selected by this Authority, because the applicant failed to suggest a figure.



as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/13703

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☒ Claims Nos.: 34-67 and 78-103
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐
☐

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/13703

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : A01N 45/00, C07C 1/00
US CL : 552/653, 514/167
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
U.S. : 552/653, 514/167

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,030,962 A (MANCHAND et al) 29 February 2000 (29.02.2000), see the entire document, especially Formula I in col. 3, examples, and all claims.	1-33 and 68-77
X	US 6,008,209 A (MANCHAND et al) 28 December 1999 (28.12.1999), see the entire document, especially Formula I in col. 3, examples, and claims 1-15.	1-33 and 68-77
X	WO 98/49138 A2 (F.HOFFMAN-LA ROCHE AG) 5 November 1998 (05.11.1998), see the entire document, especially Formula I on page 1, examples, and claims.	1-33 and 68-77

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"B" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

17 October 2004 (17.10.2004)

Date of mailing of the international search report

18 NOV 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Sabiha Qazi

Telephone No. (571) 272-1600

PCT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
PETER C. LAURO
EDWARDS & ANGELL, LLP
P.O. BOX 55874
BOSTON, MA 02205

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference 59756WO (49949)		Date of mailing (day/month/year) 18 NOV 2004 FOR FURTHER ACTION See paragraph 2 below	
International application No.	International filing date (day/month/year)	Priority date (day/month/year)	
PCT/US04/13703	30 April 2004 (30.04.2004)	30 April 2003 (30.04.2003)	
International Patent Classification (IPC) or both national classification and IPC			
IPC(7): A01N 45/00, C07C 1/00 and US Cl.: 552/653, 514/167			
Applicant			
BIOXELL S.P.A.			

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US
 Mail Stop PCT, Attn: ISA/US
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 Facsimile No. (703) 305-3230

Authorized officer

Sabiha Qazi

Telephone No. (571) 272-1600



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International appl. No. _____
PCT/US04/13703

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US04/13703

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 34-67 and 78-103

because:

☐ the said international application, or the said claim Nos. _____ relate to the following subject matter which does not require an international preliminary examination (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 34-67 and 78-103 are so unclear that no meaningful opinion could be formed (*specify*):

These claims are improper under PCT Rule 6.4(a).

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for said claims Nos. _____

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☐ See Supplemental Box for further details.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US04/13703

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>NONE</u>	YES
	Claims <u>1-33 and 68-77</u>	NO
Inventive step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-33 and 68-77</u>	NO
Industrial applicability (IA)	Claims <u>1-33 and 68-77</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

Claims 1-33 and 68-77 lack novelty under PCT Article 33(2) as being anticipated by US 6,008,209, US 6,030,962, and WO 98/49138. The references teach Vitamin D₃ analogs of Formula I, which embraces the presently claimed invention's Formula I. See appropriate sections:

US '209: See the entire document, especially Formula I in col. 3, examples, and claims.

US '962: See the entire document, especially Formula I in col. 3, examples, and claims.

WO '138: See the entire document, especially Formula I on page 1, examples, and claims.

Claims 1-33 and 68-77 lack an inventive step under PCT Article 33(3) as being obvious over US 6,008,209, US 6,030,962, and WO 98/49138 for the same reasons cited above.

Claims 1-33 and 68-77 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry. .

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article," "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended ?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Preliminary Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When ? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments ?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How ? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments ?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.